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JAPANESE PATENT OFFICE

PATENT ABSTRACTS OF JAPAN

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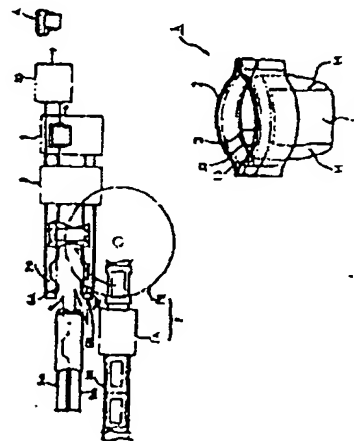
(54) MANUFACTURE OF BRIEFS TYPE DISPOSABLE
DIAPER

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(57) Abstract:

PURPOSE: To reduce costs by enabling an automatic large-scale production method by forming a back body wrapping part and front body wrapping sections to place a diaper main body thereon orthogonally and to bond it thereto.

CONSTITUTION: Optional stock is selected for a back body wrapping section and front body wrapping sections (2 and 3) independently of diaper body 1. In other words, the diaper body 1 is relayed to a turning transfer device 7B behind a suction conveying device 7A and the diaper body 1 is turned by 90° to be supplied to a specified position between belt bodies 2a and 3a of both body wrapping sections perpendicular thereto. Then the diaper body is conveyed to a bonding means 8 to bond it integrally with the belt bodies 2a and 3a of both body wrapping sections. Thereafter, the assembly is conveyed to a folding means 9 to be folded double and side ends of the belt bodies 2a and 2b of both the body wrapping sections are cut while being bonded by a bonding/cutting means 10.



*full translation attached
No equivs. outside Japan*

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Specification

1. Title of the invention

Brief-type disposable diaper production method

2. Scope of the patent claim

A brief-type disposable diaper production method involving

a process whereby a water-absorbent material is inserted between an outer sheet and an inner sheet to form a diaper body;
a process whereby a front waistband and a continuous back waistband having an elastic member at least at the side is formed;

a process whereby the diaper body is overlapped and adhered to both waistbands in the transverse direction;

a process whereby the diaper body is folded double and both waistbands are brought into contact; and

a process whereby the contacted waistbands are cut to prescribed dimensions and the regions near the cuts are adhered to integrate the waist parts at the edge portions

to produce a brief-type disposable diaper from a diaper body and a single waistband.

3. Detailed description of the invention

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Field of industrial use

The present invention relates to a brief-type disposable diaper production method.

Prior art

Known technology relating to this type of brief-type disposable diaper production method is disclosed in Japanese Unexamined Patent Application Number S57-77304: "Diaper-brief and Production Method Therefor".

Problems to be overcome by the invention

The abovementioned technology is disadvantageous in that as there is a cut-out portion in order to form an opening for the wearer to insert his/her legs, it is necessary to add a process for forming the cut-out portion, which raises production costs.

Means of overcoming the abovementioned problem

The present invention overcomes the abovementioned problem of the prior art and allows the production of brief-type disposable diapers by an automated large-scale production method involving a process whereby a diaper body is formed; a process whereby a back waist part and front waist part are formed; a process whereby the diaper body is overlapped and adhered to both waist parts in the transverse direction; and a process whereby the diaper body is adhered and integrated.

Embodiment

The present invention is described in detail based on the embodiment shown in the following drawings.

Figures 4 through 6 show an example of a brief-type disposable diaper produced according to the present invention: 1

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represents the diaper body, formed by inserting absorbent material 13 between outer sheet (for example, a water-impermeable P.E. sheet) 11 and inner sheet (for example, water permeable nonwoven cloth) 12.

2 is the back waist part and 3 is the front waist part, and the material for both waist parts 2 and 3 may be selected independently from the material for diaper body 1, although in this embodiment, the same material is used; the double layer having P.E. sheets 21 and 31 as the outside and nonwoven cloth 22 and 32 as the inside is formed, an elastic member sheet (for example, a polyurethane sheet) 23 and 33 is inserted into part thereof, so that at least the upper edge is expandable. It should be noted that it is also possible to have a single layer elastic sheet, to form a completely expandable construction. It should be noted that as waist parts 2 and 3 are preferably of an air-permeable material, it is desirable either to take the nonwoven cloth and elastic sheet, and exclude the P.E. sheet, or, when a P.E. sheet is used, to puncture a plurality of small holes therein. It is also possible to totally or partially affix the elastic member (rubber thread, rubber tape or the like) to a sheet of suitable material, to form an elastic sheet.

Moreover, the hole parts H for the insertion of the wearer's legs are dictated by the width and shape of the diaper body 1 and the width and shape of waist parts 2 and 3, and generally, the shape is such that the holes are toward the front side.

The brief-type disposable diaper production method of the

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present invention will be described below with reference to Figures 1 through 3.

Figure a shows the diaper body 1 production process: absorbent body 13 is placed on outer sheet (back sheet) 11 supplied from outer sheet roller 11a, then inner sheet (top sheet) 12, supplied from inner sheet roller 12a, is supplied thereon, to achieve a sandwich-like insertion of absorbent body 1 between outer sheet 11 and inner sheet 12; then this is transported by the first conveyor device 4 to adhering-cutting device 15, and the circumference is firmly adhered by adhering-cutting device 15, or adhered with adhesive, then cut to the required shape. It should be noted that this process is the same as known diaper production processes, and it is possible to employ a conventional production line for disposable diapers.

It should be noted that the adhering-cutting device 15 comprises two stages: first unit 15a and second unit 15b. In first unit 15a, only adhesion and the cutting of cut-away parts P proceeds, to continuously form diaper body 1, then diaper body band 1a is transported to the next process, and may be cut crosswise to the required dimensions by second unit 15b when in the vicinity of the waistbands 2,3-adhesion process.

Moreover, as there are no cut-away parts P when diaper body 1 is long, it is also possible to achieve the aims of the present invention by only adhering in first unit 15a, then cutting in second unit 15b.

There are various possible shapes for the cut-away parts P, and the shape can be selected according to the shape of the

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waistband 2,3 and the desired shape of hole parts H.

Figure 1(b) shows a waistband 2, 3 production line: elastic member sheet 23a, supplied by elastic member sheet roller 14, is cut along a continuous S-shaped cutting line in the central portion by cutting device 24 to form a pair of bands, back waistband 2a and front waistband 3a.

It should be noted that in the case of the multilayer constructions shown in Figure 3 (outer sheet (P.E. sheet) and elastic member sheet, inner sheet (nonwoven cloth) and elastic member sheet, or outer sheet and elastic member sheet-inner sheet), if elastic member sheet 23a is a band of the same width, and only part of sheet 21a, 22a is adhered, the elastic member sheet can be used effectively without cut-away parts, and holes of the desired shape can be found by selecting a suitable shape for waist part 2,3.

Figure 1(c) integrates the diaper body 1 process of Figure 1(a) and the waistband 2a, 3a process of Figure 1(b), to show the brief-type disposable diaper-forming process: the second conveying device 5a, 5b for waistbands 2a, 3a extends to become the third conveying device 6A and the force conveying device 6B.

Diaper body supply means 7 comprises suction conveying device 7A and rotation conveying device 7B, such that suction conveying device 7A for conveying the diaper body 1 that has been cut to the required dimensions is provided at the end of the first conveying device 4, after which diaper body 1 proceeds onto rotation conveying device 7B, then rotation conveying device 7B rotates the diaper body 1 through 90°, to supply diaper body 1

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transversely to a prescribed position on waistband 2a, 3a.

It should be noted that rotation conveying device 7B receives the diaper body 1 on the conveying surface of suction conveying device 7A then supplies it by rotating $1/4$ of a rotation while suction continues, then rotating the diaper body 1 that is between third conveying device 6A and fourth conveying 6B through 90° , and diaper body supply means 7 can achieve the aim by means of a suitable conveying means as follows: the adsorption surface of the diaper body is rotated through 90° according to the rotation of a suction rotation drum provided so as to be continuous with suction conveying device 7A, then the diaper body proceeds to a suction conveyor belt, whereupon it is conveyed in a transverse direction with respect to the conveying devices, thereby allowing diaper body 1 to be supplied between waistbands 2 and 3.

Diaper body 1 is then conveyed to adhesion means 8 and adhered to waistbands 2a, 3a by a suitable adhesion means such as an adhesive or heat seal.

It is then conveyed to folding means 9, and folded double by said folding means 9 to superimpose front waistband 2a and back waistband 3a.

The sides of the superimposed waistbands 2a and 2b are adhered and cut to the required shape by adhering-cutting means 10, to yield brief-type disposable diaper A.

Advantages of the invention

The present invention yields a brief-type disposable diaper by adhering and integrating a pair of waistbands and a

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diaper body and cutting to the required dimensions and so conventional diaper production lines can be used for the diaper body, the waist parts are supplied as bands and automated mass production is possible due to a belt conveying device, so the brief-type disposable diapers can be effectively produced at extremely low cost.

4. Brief description of the drawings

Figure 1 is an explanatory diagram for the brief-type disposable diaper production method of the present invention: Figure (a) shows the diaper body production process, and Figure (b) shows the waistband-integrating process.

Figure 2 is a diagram of the diaper body, and Figure 3 shows the front waist part and back waist part.

Figure 4 shows an oblique view of a brief-type disposable diaper produced according to the present invention, Figure 5 is plane view and Figure 6 is a cross-sectional view of the diaper body.

- | | |
|----|--------------------------|
| 1 | Diaper body |
| 2 | Back waist part |
| 3 | Front waist part |
| 7 | Diaper body supply means |
| 8 | Adhesion means |
| 9 | Folding means |
| 10 | Cutting means |

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通圖平3-176053 (2)

川原に於て草を刈り、又其後、川の上流に於て
草を刈るものなり。

○ 丑 辰 巳

以下問題に於て既述の如くにとつて、正則関数を
既述する。

第4図乃至第6図は本発明により製造されたブリーフ形衣に附ておむつの一例を示し、1は前口つばはで、外装シート（例えば、非透水性シートであるP. E. シート）11と内装シート12（例えば、透水性シートである不織布）とで、縫合部13を隔み込んで形成されている。

2 は内側部材シート、3 は外側部材シートであり、
内側部材シート 2 - 3 は、互つた本体 1 とは接合して
任意の厚みを選択できるが、両側にでは互つた本
体 1 と内側の部材を使用し、内側を P、E、シー
ト 21 - 31、内側を不織布 22 - 32 とする二
層構造とし、その一側に外側部材シート（例えば、
ポリウレタンシート）23 - 33 を張り込み、少
なくとも上層部においては非透水性のある構造とし
た。なお、外側部材シートの厚み構造とし全面明

シート1と2との間に挟み込んだ後、両端の切羽
定15に両側面1面と切羽定4により形成し、両端
の切羽定16により両面係を施す。または両面
削で両面して所定形状に切削する。2台、全鋼の
おひつの製造工程と何れであり、従来の他い
おひつの製造ラインを適用することが出来る。

な所、既設切頭装置より、第1ユニット13aと第2ユニット13bとの2段階とし、第1ユニット13aでは既設とともに切頭装置の切頭の人を削り、既設板におむす工法を形成して、おむす工法板は1aを改工法に送り込み、鋼管切頭板は2・3との月度工程の段階においで、第2ユニット13bにより既設両側に用定す板板に切頭してもよい。

また、おつづ本誌1の形成を長月川吹とする場合には、明確な分界が存在しないので、別ユニット1として採用のみを行う。別ユニット1として明確することにより目的を達成することができた。

३६. पञ्चमहाभूतविज्ञानम्, अष्टाध्यायम्

に押込みのある構造としてもよいことは明かである。なお、異相図より図 2・3 は、過渡性のある状態が望ましいので、P、E、シートを除いて不透明と相性異相シートとするか、P、E、シートを除く場合には多次の孔を製造させることが望ましい。2人、過渡性異相シートに、ゴム、ゴムラバー等の弾性物質を全体的に均等に付着して弾性異相シートを形成し、層間にあたり層間の足を挿入するための開口部は、おむつ等以上の厚み及び形状の選択と、図 2 及び図 3 の形状及び形状の選択により決定され、一般的に異相層に均等開口する形状とする。

次に、第1回力加第2回を参照して、本報記
ともブリーフ記載の如くおかつの製造方法を説明
する。

4 図は、右図の車体の前部工段を示し、外装シートロール11aより供給される外装シート（バックシート）11上に、電線体12を配置し、その上に、内装シートロール12aより供給される内装シート（トップシート）12を供給して、アンディップ板に電線体1を外装シート11と内

1・3の月にはおよび無きとの開口部Hの月には等により種々のものが混在されるものである。

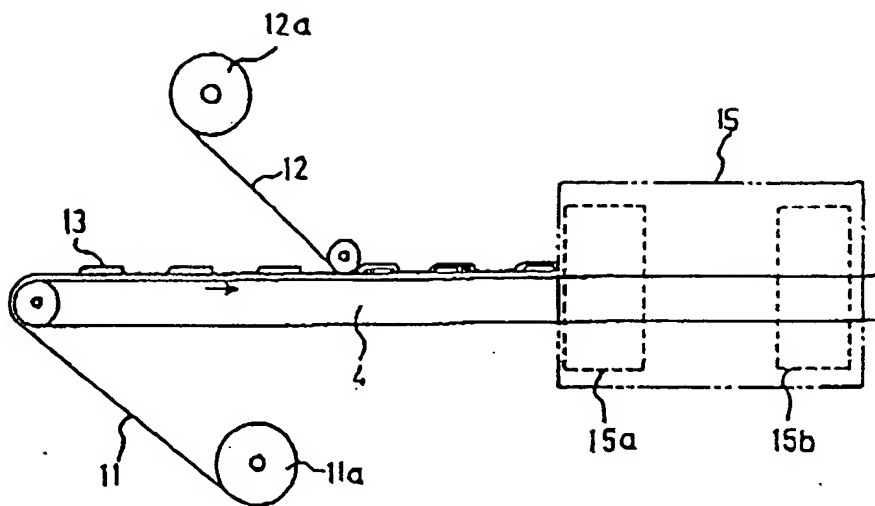
到1回の6回は、同調調り風潮が2・3のフ
ラインを押し、無性調りシートロール4より
良調3れた性調りシート23を明確別道24
により由中央部介の道線3次明確道で明確して一
片の明成はを引成し、一方を付調調り明成は3
4とし他方を同調調り明成は3aとする。

なお、第3段に示すごとく、外装シート（P、E、シート）と内装紙材シート、内装シート（不織布）と内装紙材シート、または外装シートと内装紙材シート内装シートとの多層積層とする場合
に於、内装紙材シート21aを同一巾の厚紙材シートとし、シート21a・22aの一部にのみ内装紙材シートを積層時に明瞭部分を生じることなく）使用ができ、且つ例図9第2・3の形成を任意に選択し、前記の形成の開口部を形成することができて好都合である。

[illegible]

特開平3-176053 (4)

第1図 (a)



第1図 (b)

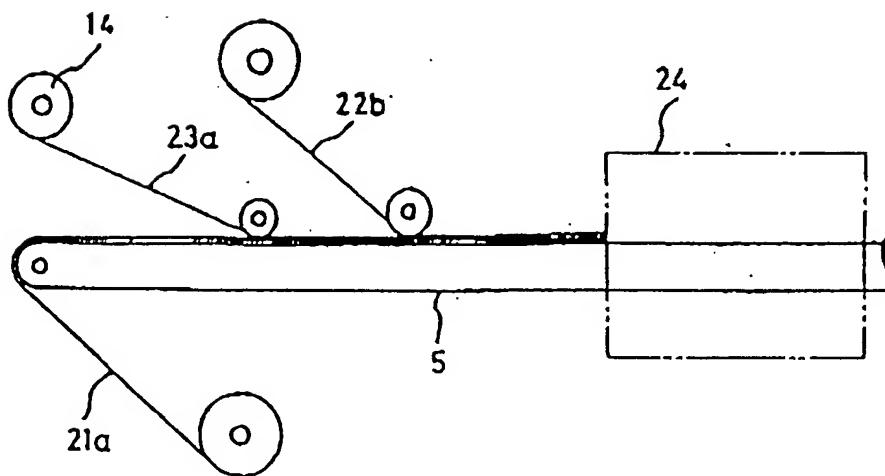
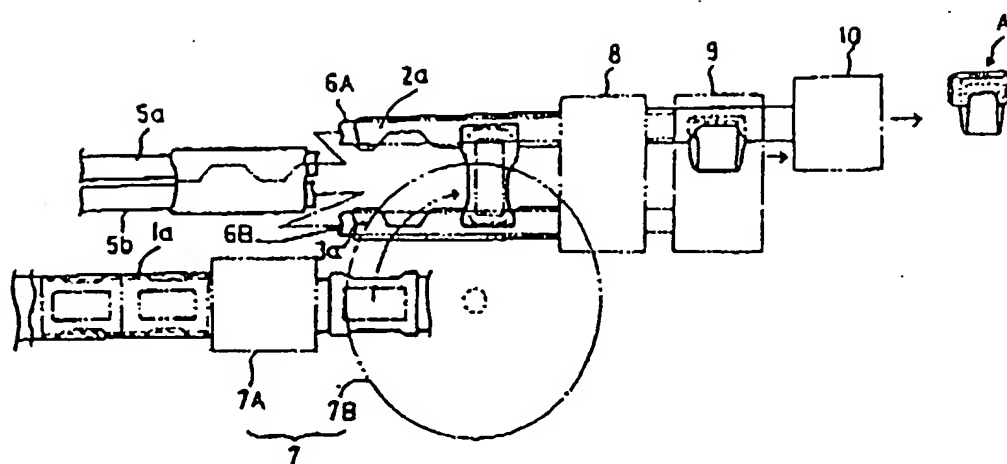
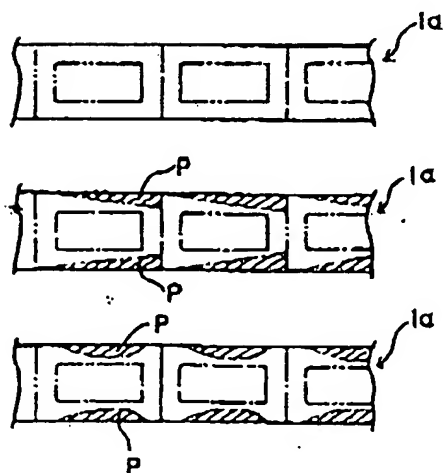


图 3-176053 (5)

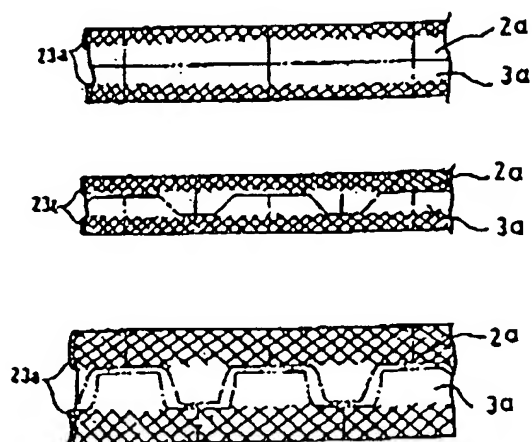
第 1 图 (C)



第 2 图

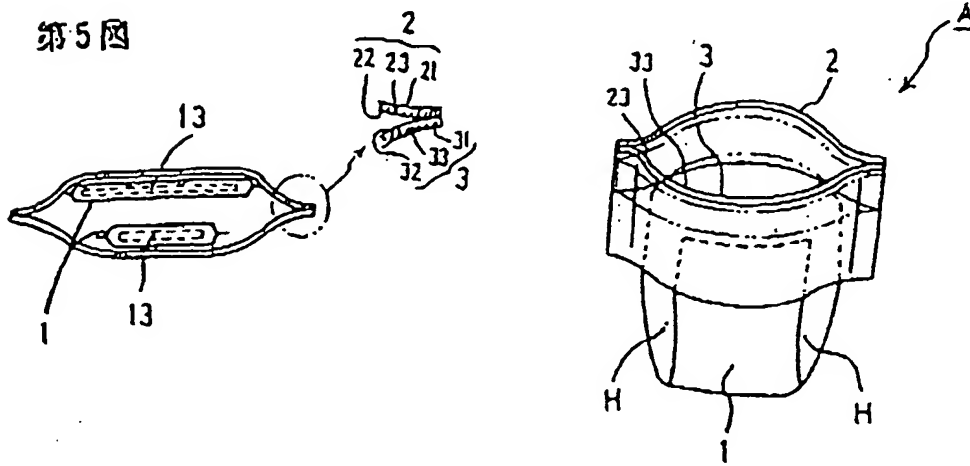


第 3 图



特許 3-17053 (6)

第4図



第6図

